VSB – TECHNICAL UNIVERSITY OF OSTRAVA

FACULTY OF ECONOMICS

DEPARTMENT OF FINANCE

Financial Analysis of Gree Electric Appliances Inc.

Finanční analýza společnosti Gree Electric Appliances Inc.

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Ostrava, 2019

VŠB - Technical University of Ostrava
Faculty of Economics
Department of Finance

Bachelor Thesis Assignment

Student: **Zhenhua Xiao**

Study Programme: B6202 Economic Policy and Administration

Study Branch: 6202R010 Finance

Title: Financial Analysis of Gree Electric Appliances Inc.
Finanční analýza společnosti Gree Electric Appliances Inc.

The thesis language: English

Description:

1. Introduction
2. Description of Financial Analysis Methodology
3. Characteristics of Gree Electric Appliances Inc.
4. Financial Analysis of Gree Electric Appliances Inc.
5. Conclusion

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List of Abbreviations
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Extent and terms of a thesis are specified in directions for its elaboration that are opened to the public on the web sites of the faculty.

Supervisor: **doc. Ing. Aleš Kresta, Ph.D.**

Date of issue: 23.11.2018
Date of submission: 10.05.2019

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"I hereby declare that I have elaborated the entire thesis including annexes myself."

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Contents

1.Introduction

The financial analysis is based on the company's financial statements and other relevant information, using a series of analytical techniques and methods to evaluate the company's profitability, solvency, liquidity, assets management, etc., and then analyze the company's operational status and predict the future direction of development.

The objective of the thesis is to perform a financial analysis of Gree Electric Appliances Inc. In the analysis, we select Gree's financial data of Gree from 2014 to 2017.

This thesis is divided into five chapters. The first part is to introduce the content and structure of the paper. The second chapter describes the financial analysis methods that need to be used. First, we introduce the three financial statements, namely the balance sheet, the income statement, and the cash flow statement. This is followed by common-size analysis, including horizontal common-size analysis and vertical common-size analysis. This analysis is a direct analysis of the data in the financial statements. Next is the financial ratios analysis, which uses the ratio to assess the company's profitability, solvency, liquidity, and assets management. Finally, DuPont analysis, mainly to explore what factors have an impact on return on equity. The third chapter is the characteristics of Gree. In this part, we introduce the history, enterprise strength and products of Gree. The fourth chapter is based on the financial analysis method of Chapter 2, using Gree's actual financial data to conduct financial analysis of Gree. The final chapter is a summary.

2.Description of The Financial Analysis Methodology

Financial analysis is used to ascertain the investment value of assets, equity or liabilities. Income, balance, and cash flow statements are typically used to extract ratios that divulge information such as solvency, profitability and liquidity. Their function is to paint a current picture of the asset that can then be compared to similar businesses or predict future performance based on past performance. We also introduce common-size analysis, including vertical analysis and horizontal analysis. That method is the analysis of financial statements data and their changes over the time. At last, We talk about the Du Pont analysis and the methods of this analysis.

2.1 Financial statement

A financial statement is the combination of the three major reports on a business. It l contains the cash flow statement, the income statement and the balance sheet of the business. All three together produce an overall picture of the health of the business. The financial statements determine if a business has the ability to repay loans, if it has the cash flow to meet bills and purchase stock. It also tells from where the business is generating cash and where the cash goes.

2.1.1 The balance sheet

Firm needs to raise cash to pay for the many assets used in their business. In the process of raising that cash, they also acquire liabilities to those who provide funding. The balance sheet presents a snapshot of the firm's assets and liabilities at one particular moment. The assets represent the use of the funds raised that are listed on the left-hand side of the balance sheet. The liabilities represent the sources of the funding that are listed on the right-hand side of the balance sheet.

Some assets are easier to convert into cash than others, these are known as current assets. The accountant put the most liquid assets at the top of the list and works down to the least liquid. The most liquid assets of a company are cash and marketable securities. In addition, a company sold some goods but had not yet received payment. These payments are due to soon and therefore the balance sheet shows the account

receivable as an asset. The next asset consists of inventories. These may be raw materials, work in process and finished products waiting to be shipped from the warehouse. The next assets list in the balance sheet are fixed assets and include items such as buildings, equipment, and patents.

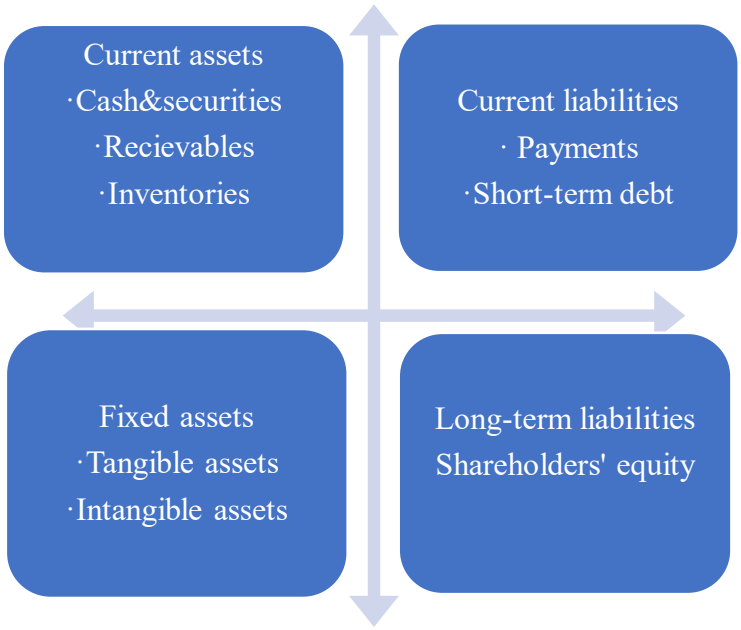
The right-hand portion of a company's balance sheet shows where the money to buy its assets came from. The accountant starts by looking at the company's liabilities. First come those liabilities that are likely to be paid off most rapidly. The borrowings and the payables are debts that a company must repay within one year. Therefore, they are classified as current liabilities. Below the current liabilities, these are a company's long-term liabilities that come due after the end of a year. A company's liabilities are financial obligations to various parties. For example, when a company buys goods from its supplies, it has a liability to pay for them; when it borrows money from a bank, it has a liability to repay the loan. Thus the suppliers and the bank have first claim on the firm's assets. What is left over after the abilities have been paid off belongs to the shareholders. This figure is known as the shareholders' equity. The shareholders' equity includes common stock and other paid-in capital, retained earnings, treasury stock.

The difference between the assets and the liabilities represents the amount of the shareholders' equity. This is the basic balance sheet identify,

$$\text{shareholder' equity} = \text{total assets} - \text{total liabilities}. \tag{2.1}$$

Figure 2.1 shows how separate items in the balance sheet are linked together. There are two classes of assets: current assets, which will soon be used or turned into cash, and long-term or fixed assets, which may be either tangible and intangible. There are also two classes of liability: current liabilities, which are due for payment shortly, and long-term liabilities.

Figure 2.1 Structure of the balance sheet



Source: own elaboration

2.1.2 The statement of cash flows

The statement of cash flows measures the sources and uses of cash during the year. The change in the company's cash balance is the difference between sources and uses. The firm requires cash when it buys new plant and machinery or when it pays interest to the bank and dividends to the shareholders. Therefore, the financial manager needs to keep track of the cash that is coming in and going out.

The statement of cash flows shows the firm's cash inflows and outflows from operations as well as from its investments and financing activities. It contains three sections. The first shows the cash flow from operation. This is cash generated from a firm's normal business activities. Next comes the cash that the firm has invested in plant and equipment or in the acquisition of new businesses. The final section reports cash flows from financing activities such as the sale of new debt or stock.

Figure 2.2 is an example of cash flow statement, from the figure we can clearly see the structure of the cash flow statement.

Figure 2.2 An example of cash flow statement

	Note	2014 Inflow/ (outflow) $M	2013 Inflow/ (outflow) $M
Cash flows from operating activities			
Interest received on investments		1,719	1,655
Interest received on loans, advances, and on net overnight settlements balances		13	30
Banking service fees received		81	66
Banking service fees paid		(61)	(64)
Dividends received		–	5
Rents received		10	9
Commonwealth grant received	1(j)	8,800	–
Net payments for investments		(40,686)	(11,592)
Cash collateral received/(pledged)		382	(253)
Interest paid on deposit liabilities		(964)	(611)
Interest paid on banknote holdings of banks		(62)	(89)
Staff costs (including redundancy)		(215)	(198)
Premises and equipment		(45)	(41)
Other		(19)	(1)
Net cash used in operating activities	6	(31,047)	(11,084)
Cash flows from investment activities			
Proceeds from the sale of Securency		7	75
Net expenditure on property, plant and equipment		(50)	(50)
Net cash provided by investment activities		(43)	25
Cash flows from financing activities			
Distribution to the Commonwealth		–	(500)
Net movement in deposit liabilities		27,391	8,183
Net movement in loans and advances		–	1
Net movement in notes on issue		3,835	3,348
Net cash provided by financing activities		31,226	11,032
Net increase/(decrease) in cash		136	(27)
Cash at beginning of financial year		137	164
Cash at end of financial year	6	273	137

Source: https://www.rba.gov.au/publications/annual-reports/rba/2014/fin-statements/cash-flow.html

2.1.3 Income statement

The income statement measures the profitability of the company during the year. It

shows the difference between revenues and expenses. It shows how profitable the firm has been during the past year.

The income statement is also known as a profit and loss (P&L) statement, statement of earnings, statement of operations or statement of income. The basic equation on which an income statement is based is:

$$\text{revenues} - \text{expenses} = \text{net income} \tag{2.2}$$

All companies need to generate revenues to stay in business. Revenues are used to pay expenses, interest payments on debt and taxes owed to the government. After the costs of doing business are paid, the amount left over is called net income. Net income is theoretically available to shareholders, though instead of paying out dividends, the firm's management often chooses to retain earnings for future investment in the business. Figure 2.3 is an example of income statement.

Figure 2.3 An example of income statement

	Note	2008 $M	2007 $M
INCOME			
Interest revenue	2	5,204	5,400
Net gains/(losses) on securities and foreign exchange	2	(665)	(2,774)
Dividend revenue	2	4	4
Fees and commissions	2	18	17
Other revenue	2	82	63
Total Income		**4,643**	**2,710**
EXPENSES			
Interest expense	2	2,940	3,857
General administrative expenses	2	231	217
Other expenses	2	42	29
Total Expenses		**3,213**	**4,103**
Net Profit		**1,430**	**(1,393)**

Source: https://www.rba.gov.au/publications/annual-reports/rba/2008/fin-statements/income-stmt.html

2.2 Common-size analysis

A common-size financial statement displays line items as a percentage of one selected or common figure. Creating common-size financial statements makes it easier to analyze a company over time and compare it with its peers. Using common-size financial statements helps investors spot trends that a raw financial statement may not uncover. The common-size analysis consists of two parts: horizontal common-size analysis and vertical common-size analysis.

2.2.1 Horizontal common-size analysis

Horizontal analysis is used in financial statement analysis to compare historical data, such as ratios, or items, during a number of accounting periods. Horizontal analysis can either use absolute comparisons or percentage comparisons, where the numbers in each succeeding period are expressed as a percentage of the amount in the baseline year, with the baseline amount being listed as 100%.

"Horizontal analysis of financial statements can be performed on any of the item in the income statement, balance sheet and statement of cash flows. For example, this analysis can be performed on revenues, expenses, assets, cash, equity and liabilities. It can also be performed on ratios such as earnings per share, dividend payout, and other similar ratios."[1]

The formulas are as follows:

$$\text{absolute change} = a_1 - a_0 \tag{2.3}$$

$$\text{relative change} = \frac{a_1 - a_0}{a_0} \tag{2.4}$$

where a_0 is the amount of the item in the base year (usually the benchmark year), a_1 is the amount of the item in the comparison year (usually the following year).

Figure 2.4 is an example of horizontal common-size analysis of income statement. It shows the amount of change and rate of change for amounts of items in a company's income statement from 2015 to 2016.

[1] Source: https://www.readyratios.com/reference/analysis/horizontal_analysis_of_financial_statements.html

Figure 2.4 Horizontal common-size analysis of income statement.

Details	2016 (In US $)	2015 (In US $)	Amount	Percentage
Sales	**30,00,000**	**28,00,000**	200,000 *	7.14% **
(-) Cost of Goods Sold (COGS)	(21,00,000)	(20,00,000)	100,000	5%
Gross Profit	**900,000**	**800,000**	100,000	12.50%
General Expenses	180,000	120,000	60,000	50%
Selling Expenses	220,000	230,000	(10,000)	(4.35%)
Total Operating Expenses	**(400,000)**	**(350,000)**	50,000	14.29%
Operating Income	**500,000**	**450,000**	50,000	11.11%
Interest expenses	(50,000)	(50,000)	§	§
Profit before Income Tax	**450,000**	**400,000**	50,000	12.50%
Income Tax	(125,000)	(100,000)	25,000	25%
Net Income	**325,000**	**300,000**	25,000	8.33%

Source: https://www.wallstreetmojo.com/horizontal-analysis/

2.2.2 Vertical common-size analysis

Vertical common-size analysis is a technique used to identify where a company has applied its resources and in what proportions those resources are distributed among the financial statements. The analysis determines the relative weight of each item and its share in asset resources or revenue generation.

In the vertical analysis, the elements of financial statements are shown as a percentage of another item. The assets, liabilities and equity are represented as a percentage of total assets. In case of income statement, each element of income and expenditure is defined as a percentage of the total sales.

In Figure 2.5, a vertical common-size analysis of balance sheet dividing each item on the statement by the same period's total assets and expressing the results as percentages. Then analyze the company's current situation by comparing those results.

Figure 2.5 vertical common-size analysis of balance sheet

Liabilities (US$ Mn)	30.09.2016	30.09.2015		Assets (US$ Mn)	30.09.2016	30.09.2015
(1)Share capital	0.8%	0.8%		(1)Non-current assets		
				Fixed assets	42.5%	41.7%
(2)Reserves and Surplus	58.3%	56.7%		Non-current investments	43.9%	45.0%
				Long-term loans and advances	2.9%	2.8%
(3)Hybrid perpectual securities	1.9%	2.0%		Long-term loans and advances	0.2%	0.2%
(4) Non-current liabilities				(2)Current assets		
Long-term borrowings	19.6%	20.6%		Current investments	1.2%	0.9%
Deferred tax liabilities (net)	1.8%	1.9%		Inventories	6.6%	6.9%
Other long-term liabilities	0.5%	1.0%		Trade receivables	0.7%	0.4%
Long-term provisions	2.7%	2.5%		Cash and bank balances	0.5%	0.4%
	0.0%	0.0%		Short-term loans and advances	1.3%	1.7%
(5) Current liabilities				Other current assets	0.1%	0.0%
Short-term borrowings	1.7%	0.0%				
Trade payables	5.6%	5.0%				
Other current liabilities	5.8%	8.0%				
Short-term provisions	1.3%	1.4%				
Total Equity and Liabilities		100.0%		Total Assets	100.0%	100.0%

Source: https://www.wallstreetmojo.com/vertical-analysis-common-size/

2.3 Financial ratio analysis

Financial ratios compare the results in different items of the financial statements. The analysis of these ratios is designed to draw conclusions regarding the financial performance, liquidity, leverage, and assets management of a company. This type of analysis is widely used, since it is solely based on the information located in the financial statements, which is generally easy to obtain. In addition, the comparison of these financial ratios can assess the financial health of a company.

2.3.1 Profitability ratios

The profitability ratios are mainly divided into four parts: operating profit margin, net profit margin, return on assets and return on equity. The data calculating these ratios can basically be found in financial statements. Profitability ratios can measure the ability to generate a profit from invested capital in the form of return during a period. The higher the profitability ratios, the better competitive position of the company.

Operating profit margin

The operating profit margin is a type of profitability ratio known as a margin ratio. A company's operating profit margin ratio shows how well the company manages its

operations and measures operating profit per one unit of revenues. For instance, a company with a higher profit margin ratio makes more money on each dollar of revenues than a company with a lower profit margin. To calculate a company's operating profit margin ratio, we divide its operating income by its net sales revenues,

$$\text{operating profit margin(OPM)} = \frac{\text{EBIT}}{\text{revenues}}, \tag{2.5}$$

where EBIT is earning before interest and taxes, which can be calculated by revenues minus expenses.

Net profit margin

When we analyze a company's income statement, calculating a firm's net profit margin shows how much after-tax profit the company earns from one unit of revenues. Profit margins vary by sector and industry, but all else being equal, the higher a company's net profit margin compared to competitors, the better.

To calculate net profit margin from a company's income statement, the formula is as follows:

$$\text{net profit margin(NPM)} = \frac{\text{EAT}}{\text{revenues}}, \tag{2.6}$$

where EAT is earning after taxes can also be called net profit.

Return on assets

"Return on assets is a profitability ratio that provides how much profit a company can generate from its assets. In other words, return on assets measures how efficient a company generates earnings from their assets on their balance sheet. ROA is shown as a percentage, and the higher the number, the more efficient a company's management is at managing its balance sheet to generate profits." [2]

The formula for ROA is:

$$\text{return on assets(ROA)} = \frac{\text{EBIT}}{\text{assets}}. \tag{2.7}$$

Return on equity

The return on equity ratio is the most important of all the profitability ratio for an investor. The return on equity shows investor how effectively the money they invested

[2] Source: https://www.investopedia.com/ask/answers/031215/what-formula-calculating-return-assets-roa.asp

in their firm is being used. It measures a company's efficiency at generating profits from every unit of the shareholders' equity. On a company's balance sheet, equity is represented by the following accounts: common stock, preferred stock, paid-in capital, and retained earnings. Equity can be calculated by subtracting total liabilities from total assets.

Here's the formula for the return on equity ratio:

$$\text{return on equity(ROE)} = \frac{\text{EAT}}{\text{equity}}. \tag{2.8}$$

2.3.2 Liquidity ratios

The liquidity ratios measure a company's ability to meets its immediate or short-term liabilities and obligations. They compare company's liquid assets (in the form of cash or can be quickly converted in cash) and short-term liabilities and obligations. The liquidity ratios include current ratio, quick ratio and cash ratio.

Current ratio

The current ratio is a financial ratio that can measure a company's financial strength. It calculates how many dollars in assets are likely to be converted to cash within one year in order to pay debts that come due during that same year. We can calculate the current ratio by dividing the total current assets by the total current liabilities:

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}. \tag{2.9}$$

"A higher ratio indicates a higher level of liquidity. In contract, a lower ratio indicates less liquidity, implying a greater reliance on the operating cash flow and outside financing to meet the short-term obligation. There are some advantages of the current liquidity ratio. First it implicitly assumes that inventories and accounts receivable are liquid. Next, the amount of inventory can be influenced by the choice of accounting inventory method. Last, the current ratio does not reflect the structure of the current assets and short-term liabilities"[3]

[3] Source: Dluhosova (2014, P81)

Quick ratio

The quick ratio is a measure of how well a company can meet its short-term financial liabilities and it is more stringent test of company's liquidity. It can be calculated as follows:

$$\text{quick ratio} = \frac{\text{current assets - inventories}}{\text{current liabilities}}. \qquad (2.10)$$

The quick ratio is a more stringent assessment of a company's ability to pay its current liabilities. It does this by eliminating all but the most liquid of current assets from consideration. Inventory is the most notable exclusion, because it is not as rapidly convertible to cash and is often sold on credit.

Cash ratio

The cash ratio is the ratio of a company's total cash and cash equivalents to its current liabilities. The metric calculates a company's ability to meet its short-term debt with the cash resources. It is the most conservative of all the liquidity ratios. The formula for the cash ratio is to add together cash and cash equivalents, and divide by current liabilities:

$$\text{cash ratio} = \frac{\text{cash} + \text{marketablesecurities}}{\text{current liabilities}}, \qquad (2.11)$$

where marketable securities in this formula can be sold immediately at the market within a few hours. If a company wants to show a high cash ratio to the outside world, it must keep a large amount of cash on hand as of the measurement date.

2.3.3 Solvency ratios

When a firm borrows money, it promises to take a series of interest payments and then to repay the amount that it has borrowed. If profits rise, the debtholders continue to receive only the fixed interest payment, so all the gains go to the shareholders. Of course, the reverse happens if profits fall. In this case shareholders bear most of the pain. If times are sufficiently hard, a firm that has borrowed heavily may not be able to pay its debts. The firm is then bankrupt, and shareholders lose most or all of their entire

investment. Because debt increases returns to shareholders in good times and reduces them in bad time, it is said to create financial leverage.

The solvency ratios measure company's ability to meet its long-term obligations. The company should take care of solvency ratios to ensure that lenders are happy to continue to take on the company's debt.

Debt ratio

This ratio shows how much the business is in debt, making it an excellent way to check the long-term solvency of a company. The higher the debt ratio, the more leveraged a company is, implying greater financial risk. The formula is:

$$\text{debt ratio} = \frac{\text{total debts(total liabilities)}}{\text{total assets}}. \qquad (2.12)$$

"A debt ratio greater than 100% tells you that a company has more debt than assets. Meanwhile, a debt ratio less than 100% indicates that a company has more assets than debt. The debt ratio can measure the financial health of a company and help investors determine a company's risk level."[4]

Debt-to-equity ratio

The debt-to-equity ratio is calculated by dividing a company's total liabilities by its shareholder equity. These numbers are available on the balance sheet of a company's financial statements. The formula for debt-to-equity ratio is

$$\text{debt - to - equity ratio} = \frac{\text{total debts(total liabilities)}}{\text{total equity}} \qquad (2.13)$$

The debt-to-equity ratio is similar to debt ratio and relates the amount of the company's debt to company's equity. If debt-to-equity ratio is higher than one, the company uses more debt for assets financing than equity.

Interest coverage

The interest coverage ratio is a debt ratio and profitability ratio used to determine how easily a company can pay interest on its debt. The interest coverage ratio may be calculated by dividing a company's earnings before interest and taxes (EBIT) during a given period by the company's interest payments due within the same period.

[4] Source: https://www.investopedia.com/terms/d/debtratio.asp

The formula for the interest coverage ratio is:

$$\text{interest coverage ratio} = \frac{\text{EBIT}}{\text{interest paid}}, \qquad (2.14)$$

A creditor uses this ratio to ensure if a company is able to support additional debt. If a company does not have enough money to pay the interest of the debt, it certainly won't be able to pay the principle. Thus, this ratio can measure the risk involving lending.

2.3.4 Activity ratios

"*Activity ratios are also known as a assets utilization ratios or operating efficiency ratios. This category is intended to measure how well company manages various activities and particularly how efficiently it manages its assets. Activity ratios are analyzed as indicators of ongoing operational performance. Those ratios reflect the efficient management of both working capital management and long-term assets. Efficiency has a direct impact on liquidity, so some activity ratios are also useful in assessing liquidity.*"[5]

Average collection period (ACP):

The average collection period is the amount of time it takes for a company to collect its receivable. The average collection period is calculated by dividing the average balance of accounts receivable by total net credit sales for the period and multiplying the quotient by the number of days in the period.

The formula is:

$$\text{average collection period} = \frac{\text{accounts receivable}}{\text{revenues}} \cdot 360. \qquad (2.15)$$

In general, a lower average collection period is more favorable than a higher average collection period. A low average collection period indicates that the company is collecting payments faster. However, this may be an indication that its credit terms are too strict, and customers may seek suppliers or service providers with more lenient payment terms

[5] Source: Dluhosova (2014, P75)

Account receivable turnover (ART)

The accounts receivable turnover ratio can be used to measure a company's ability in collecting its receivables owed by clients. The ratio shows how quickly that short-term debt is collected or is paid. The receivables turnover ratio can be calculated as follows,

$$\text{account receivable turnover(ART)} = \frac{\text{revenues}}{\text{accounts receivable}}. \tag{2.16}$$

"A high ratio can also suggest that a company is conservative when it comes to extending credit to its customers. An effective credit policy can be beneficial since it could help the company avoid extending credit to customers who may not be able to pay on time."[6]

Inventory turnover (IT)

Managing inventory levels is important for companies since it can show whether sales efforts are effective or whether costs are being controlled. The inventory turnover ratio is an important measure of how well a company generates sales from its inventory. The inventory turnover ratio can be calculated as follows,

$$\text{inventory turnover(IT)} = \frac{\text{costs of goods sold}}{\text{average inventory}}. \tag{2.17}$$

The higher the inventory turnover, the better since a high inventory turnover typically means a company is selling goods very quickly. Low inventory turnover would likely indicate weaker sales

Total assets turnover (TAT)

Total assets turnover is an efficiency ratio which tells how successfully the company is using its assets to generate revenues. Simply speaking, a company with a higher total asset turnover ratio is considered better at making money through the efficient use of its assets.

The formula for total assets turnover is:

$$\text{total assets turnover(TAT)} = \frac{\text{revenues}}{\text{total assets}}. \tag{2.18}$$

2.4 DuPont analysis

DuPont analysis is a tool for a detailed assessment of a company's profitability and

[6] Source: https://www.investopedia.com/terms/r/receivableturnoverratio.asp

can help us to avoid misleading conclusions regarding a company's profitability.

The analysis of a company's profitability involves some nuances. For example, in the ROE formula, we use the book value of the company's common equity. This calculation method may be misleading, as we cannot be sure what resulted in the change in the common equity. To avoid erroneous conclusions based on the ROE analysis, we can use a more in-depth analysis of this measure. The formula is as follows,

$$\mathrm{ROE} = \frac{\mathrm{EAT}}{\mathrm{equity}} = \frac{\mathrm{EAT}}{\mathrm{revenues}} \cdot \frac{\mathrm{revenues}}{\mathrm{assets}} \cdot \frac{\mathrm{assets}}{\mathrm{equity}}. \tag{2.19}$$

If we want to separate the effect of interest and taxes, we can decompose the profit margin as follows:

$$\frac{\mathrm{EAT}}{\mathrm{revenues}} = \frac{\mathrm{EAT}}{\mathrm{EBT}} \cdot \frac{\mathrm{EBT}}{\mathrm{EBIT}} \cdot \frac{\mathrm{EBIT}}{\mathrm{revenues}}. \tag{2.20}$$

Then we combine the two formulas:

$$\mathrm{ROE} = \frac{\mathrm{EAT}}{\mathrm{EBT}} \cdot \frac{\mathrm{EBT}}{\mathrm{EBIT}} \cdot \frac{\mathrm{EBIT}}{\mathrm{revenues}} \cdot \frac{\mathrm{revenues}}{\mathrm{total\,assets}} \cdot \frac{\mathrm{total\,assets}}{\mathrm{equity}}, \tag{2.21}$$

where can be written as

$$\mathrm{ROE} = \text{tax burden} \cdot \text{interest burden} \cdot \mathrm{OPM} \cdot \text{assets turnover} \cdot \text{financial leverage}. \tag{2.22}$$

2.4.1 Methods for quantification of influence

Influence quantification enables is to analyze indicators, whose change have caused change in the basic ratio and shows how the component ratios contribute to the change in basic ratio. It includes four different methods.

Method of gradual changes

This method works with absolute changes in component ratios, it can be applied regardless of positive or negative value in component ratio or basic ratio. But order in decomposition may influence the results. In this method, we will use absolute change in component ratios:

$$\Delta a = a_1 - a_0, \tag{2.23}$$

various a represents component ratio.

In the case of decomposition with three component ratios:

$$\Delta x_{a1} = \Delta a_1 \cdot a_{2,0} \cdot a_{3,0},$$
$$\Delta x_{a2} = a_{1.1} \cdot \Delta a_2 \cdot a_{3,0},$$
$$\Delta x_{a3} = a_{1,1} \cdot a_{2,1} \cdot \Delta a_3, \quad (2.24)$$

Δx_{a1} represents absolute change in the basic ratio caused by the change in the first (a_1) component ratio.

Logarithmic decomposition method

The advantage of this method is that we need just one formula for the impact quantification regardless of how many component ratios we have. The component ratio is calculated as follows:

$$\Delta x_{ai} = \frac{lnI_{ai}}{lnI_x} \cdot \Delta x, \quad (2.25)$$

I_a represents the index of change in basic ratio:

$$I_x = \frac{x_1}{x_0}, \quad (2.26)$$

I_a represents the index of change in component ratio:

$$I_a = \frac{a_{i,1}}{a_{i,0}}. \quad (2.27)$$

Functional decomposition method

This method works with the relative changes in basic and component ratios:

$$\Delta x^{relat} = R_x = \frac{x_1 - x_0}{x_0}, \quad (2.28)$$

$$\Delta a_i^{relat} = R_{ai} = \frac{a_1 - a_0}{a_0}. \quad (2.29)$$

In case of three component ratios:

$$\Delta x_{a1} = \frac{1}{R_x} \cdot R_{a1} \cdot \left(1 + \frac{1}{2} \cdot R_{a2} + \frac{1}{2} R_{a3} + \frac{1}{3} R_{a2} \cdot R_{a3}\right) \cdot \Delta x,$$
$$\Delta x_{a2} = \frac{1}{R_X} \cdot R_{a2} \cdot \left(1 + \frac{1}{2} \cdot R_{a1} + \frac{1}{2} R_{a3} + \frac{1}{3} R_{a1} \cdot R_{a3}\right) \cdot \Delta x,$$
$$\Delta x_{a3} = \frac{1}{R_x} \cdot R_{a3} \cdot \left(1 + \frac{1}{2} \cdot R_{a1} + \frac{1}{2} R_{a2} + \frac{1}{3} R_{a1} \cdot R_{a2}\right) \cdot \Delta x. \quad (2.30)$$

Integral decomposition method

The procedure is similar as in case of functional method, the formula is given as:

$$\Delta x_{aj} = \frac{R_{aj}}{R_{x^*}} \cdot \Delta x$$
$$R_{x^*} = \sum_{j=1}^{N} R_{aj}. \quad (2.31)$$

3.Characteristics of Gree Electric Appliances Inc.

Gree Electric Appliances, Inc. of Zhuhai was founded in 1991 it is a diversified international industrial group, whose business covers residential air conditioners, central air conditioners, intelligent equipment, home appliances, air source water heaters, smart phones, refrigerators, etc. It is the world's largest residential air-conditioner manufacturer. The Company offers two types of air conditioner: household air conditioners and commercial air conditioners. The Company distributes its products within China's domestic market and to overseas markets under the brand name of Gree.

3.1 History of Gree Electric Appliances Inc.

"Gree was established in Zhuhai, Guangdong in 1989 with its former name of Zhuhai City Haili Cooling Engineering Company Limited. It was restructured and renamed to Gree Electric Appliances Inc, of Zhuhai in 1994. The company started as a nameless factory with 200 employees and annual production of less than 20,000 units. In 1995, after a series of reforming structure by Dong Mingzhu, Gree production and sales volume become No.1 in China market share.

It was listed on the Shenzhen Stock Exchange in 1996. In June 2001, Gree Electric Appliances (Brazil) Co., Ltd was put into production with investment of 20 million USD and annual capacity up to 500,000 sets, this is a key step in overseas markets. In 2001, Dong Mingzhu was promoted as President of Gree Electric Appliances. With reforming the senior management and work style, and setting the target of building a centenary enterprise, Gree developed rapidly in 10 years. In Dec. 2003, the 4th phase construction of Gree Electric Appliances headquarters was put into production. Since then, Gree became the world's largest specialized air conditioning production base. In the year 2005, sales volume for Gree residential air conditioners exceeded 10 million sets and Gree became the No. 1 manufacturer in the world. The company grew 47% in 2008, notwithstanding the global recession, booking $23 billion in contract sales. On Apr. 26, 2013, Gree released 2012 Annual Report. Gree sales revenue achieved 100,01

billion RMB with the growth of 19.87% and sales profit 7.38 billion RMB with the growth of 40.92%. Thus Gree had become the first electric appliances enterprise in China with both revenue and profit exceeding 100 billion RMB. [7]

3.2 Enterprise strength

Technology strength

Technology is the power for enterprise development. In expanding process, Gree always insists on self-innovation and mastering core technologies for the transformation from "Made in China" to "Created in China".

Gree has strong strength with 130 domestic and foreign advanced processing equipment. The company has more than 8,000 technicians, 2 national technical research centers, 1 provincial enterprise key lab, 6 institutes, and 52 research centers and over 570 labs. Gree has applied for more than 15,600 technology patents, including about 5,000 innovation patents. In 2014 alone, Gree has applied over 4,100 patents, which means 11 patents were born in every day. Annual investment for technology research is more than 4 billion RMB. In 2014, the investment exceeded 5 billion RMB.

Market strength

At the very beginning of the foundation of the company, Gree Electric Appliances adopted the strategy of “encircle the cities from rural areas”. It focused on capturing the markets which are the weak marketing areas for the famous air conditioning enterprises. Gree established its brand image in the following provinces: Anhui, Zhejiang, Hunan, Guangxi, Henan and Hebei, and it built its market foothold in those areas. While concentrating on the existing markets, Gree turned its focus from the existing markets to the major and influential cities, like Beijing, Shanghai, Nanjing in China. At the same time, it is also heading off to the overseas markets.

Through these steps, Gree has already occupied China's major markets. And with good sales service and after-sales service, Gree has established a good brand image among consumers.

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[7] Source：http://global.gree.com/ywb/aboutgree/developmenthistory/index.shtml

3.3 Brand strategy

"*Brand 1.0: At the beginning of foundation, Gree particularly focused on product quality and put forward a slogan of "Gree Creates Much Sales Chance". With superior product quality, Gree was favored by consumers, standing out from domestic air conditioning market.*

Brand 2.0: During the initial stages of brand building, Gree concentrated on creating a high quality and reliable image. With the listing of a large number of high-quality products, under the slogan of "Building Better Air Conditioning" and "Gree is High Quality", Gree has won the unanimous approval of consumers and successfully created a high-quality brand image.

Brand 3.0: Based on independent technological innovation, Gree overcame core technologies of kinds of products continually, with product function, shape and performance improved comprehensively. Under the slogan of "Gree, Master of Core Technologies", its superior products took the leap in domestic home appliances industry, thus Gree started to go globally.

Brand 4.0: Having established specific brand foundation, Gree focused on strengthening social responsibility. With a grand vision of "promoting national industrial image, protecting global environment and creating comfortable living space", Gree Proposed a brand slogan of "For the Clearer Sky and Greener Earth", which is quite impressive to global consumers.

Brand 5.0: For a long time, Gree has been focused on representing "Made in China", reshaping the image of "Made in China" and promoting China's own brands to the world. Gree's goal is not only limited to the expansion of overseas markets, but more importantly, it leads the "Made in China" to go out, go out with excellent product quality and high-end technology, so that Gree technology and products serve the world. Made in China, loved by the world!"[8]

[8] Source: (http://global.gree.com/ywb/aboutgree/companyintroduction/brandstrategy/index.shtml)

3.4 Products of Gree

Zhuhai Gree Electric Appliance Co., Ltd. is an international home appliance enterprise integrating R&D, production, sales and service. It owns three brands of Gree, TOSOT and Jinghong. It mainly focuses on household air conditioners, central air conditioners, air energy water heaters, living appliances and refrigerators. And other products. In recent years, Gree has also entered the mobile phone field, and its first mobile phone was launched in March 2015.

Figure 3.1 The products of Gree Electric Appliances, Inc.

Source:http://global.gree.com/ywb/productsservices/residentialairconditioner/guaji_e/index.shtml

3.5 Overseas business of Gree

As the largest air-conditioner manufacturer in China with the highest production and sales volume, Gree Electric Appliance Group has been committed to the expansion of overseas markets since its establishment in 1991. Air-conditioning products have entered Hong Kong, the Philippines, Italy, Spain, Germany, the United States, Brazil and other markets. It has a steady growth trend and has covered more than 60 countries and regions around the world, accounting for 30% of the global air-conditioning market share. Since 1996, the export volume of air conditioners has been at the forefront of the domestic appliance industry. In 2000, the export volume reached US$74.28 million. Especially in 2000, Gree Electric Group invested 20 million US dollars in Brazil to

carry out overseas processing trade, which provided a new growth point for enterprise development. Since 2005, Gree's home air conditioner production and sales have been the first in the world for 11 consecutive years.

3.6 Shareholders of Gree

In 2018, Gree's total market capitalization was approximately 278.348 billion yuan, the total number of shareholders was 500,334, and the average number of shares held was 12026 shares. Figure 4.1 shows the number of shares held by Gree in 2018 and September 30, and the shareholding ratio.

Table 3.1 Gree's shareholding ratio (30,09,2018)

Name of shareholders	Number of shares held (shares)	Shareholding ratio
Zhuhai Gree Group Co.,Ltd.	1,096,255,624	18.22%
Hebei Jinghai Guarantee Investment Co., Ltd.	536,022,233	8.91%
Hong Kong Securities Clearing Co., Ltd.	472,631,682	7.86%
China Securities Finance Corporation Limited	179,870,800	2.99%
China Life Insurance (Group) Company	121,128,898	2.00%
Qian Hai Life Insurance Co.,LTD.	115,585,298	1.92%
Central Huijin Asset Management Co., Ltd.	84,483,000	1.40%
National Council for Social Security Fund,PRC	49,000,004	0.81%
Mingzhu Dong (Chairman of the Board, President of Gree)	44,488,492	0.74%

Source:

http://vip.stock.finance.sina.com.cn/corp/go.php/vCI_StockHolder/stockid/000651/displaytype/30.phtml

4. Financial Analysis of Gree Electric Appliances Inc

In this chapter, we conduct the financial analysis based on Gree's financial data from 2014 to 2017, including common-size analysis, financial ratios analysis and DuPont analysis. We have already explained these methods of financial analysis in detail in Chapter 2.

4.1 Common-size analysis of Gree

In the financial statements, we can only observe the amount of each item, and the common-size analysis method allows us to know more details about each item, let us know the proportion of each item and the change of a specific period. The following is the simplification of the financial statements.

4.1.1 Horizontal common-size analysis of Gree

In this section, we select some of the important items in the financial statements and compare their amounts to those of the previous year in order to observe their changes, including absolute change and relative change.

In the balance sheet, because all data are positive, so if the absolute or relative change of a item is negative, it means that the amount of the item decreased relative to the previous year; if the absolute or relative change is positive, the amount of the item increased relative to the previous year. Tables 4.1 and 4.2 show the absolute and relative changes in selected items in the balance sheet from 2014 to 2017, respectively.

From the two tables 4.1and table 4.2, we can clearly observe that only fixed assets decreased slightly in 2016 compared to 2015, and other items showed an upward trend, with the most significant increase from in 2017. In terms of asset classification, current assets began to grow substantially in 2016, and even increased by more than 20% in 2017. As for the liabilities, it also began to show significant growth in 2016.

Table 4.1 Absolute changes of selected items in balance sheet (In Millions of CNY)

Year	2015/2014	2016/2015	2017/2016
Total assets	5,467.07	20,675.97	32,594.01
Current assets	805.83	21,965.76	28,619.58
Fixed assets	4,661.24	-1,289.79	3,974.43
Current liabilities	4,236.66	14,226.83	20,638.78
Total liabilities	2,098.35	14,225.16	20,971.19
Total equity	3,368.73	6,450.81	11,622.82
Total liabilities & Shareholders' equity	5,467.07	20,675.97	32,594.01

Source: own elaboration based on company's financial statements

Table 4.2 Relative changes of each items in balance sheet

Year	2015/2014	2016/2015	2017/2016
Total assets	3.50%	12.79%	17.87%
Current assets	0.67%	18.16%	20.03%
Fixed assets	12.92%	-3.17%	10.07%
Current liabilities	3.91%	12.63%	16.27%
Total liabilities	1.87%	12.46%	16.33%
Total equity	7.63%	13.57%	21.53%
Total liabilities & Shareholders' equity	3.50%	12.79%	17.87%

Source: own elaboration based on company's financial statements

Table 4.3 and table 4.4 are the data for horizontal common-size analysis of income statement. From table 4.3 and 4.4, compared with 2014, the amount of almost all itmes in the income statement decreased in 2015, and the most significant reduction was gross profit, which was reduced by 33.92%. By 2016, the profitability of company increased significantly, and the growth of gross profit and operating income was the most obvious, far greater than the growth of expenditure. By 2017, almost all items have increased

significantly, with growth exceeding 30%, of which operating income and net profit have increased by more than 40%, indicating that in 2017, the company's operations are very good.

Table 4.3 Absolute change of income statement (In Millions of CNY)

Year	2015/2014	2016/2015	2017/2016
Total revenue	-39,440.90	9,548.65	39,906.45
Gross profit	-17,385.20	3,269.74	13,126.45
Operating income	-2,573.05	3,973.11	8,629.94
Net income	-1,622.73	2,931.19	6,937.95
Total operating expenses	-36,867.90	5,575.54	31,276.51
Cost of revenue	-22,055.70	6,278.90	26,780.00

Source: own elaboration based on company’s financial statements

Table 4.4 Relative change of income statement (In Millions of CNY)

Year	2015/2014	2016/2015	2017/2016
Total revenue	-28.17%	9.50%	36.24%
Gross profit	-33.92%	9.66%	35.35%
Operating income	-15.99%	29.40%	49.34%
Net income	-11.46%	23.39%	44.87%
Total operating expenses	-29.75%	6.41%	33.77%
Cost of revenue	-24.85%	9.41%	36.70%

Source: own elaboration based on company’s financial statements

4.1.2 Vertical common-size analysis

In the vertical common-size analysis, all items are displayed in percentage form, and we can clearly see the company's resource allocation.

As can be seen from Table 4.4 and Figure 4.1, cash and cash equivalents always accounted for a large proportion of the company's assets. In 2016 and 2017, even more than 50%, the company had cash to cope with short-term debt to reduce short-term risks, but a large number of cash can also put pressure on the company. Followed by accounts receivable, the proportion of accounts receivable in 2014 was 15%, exceeding the

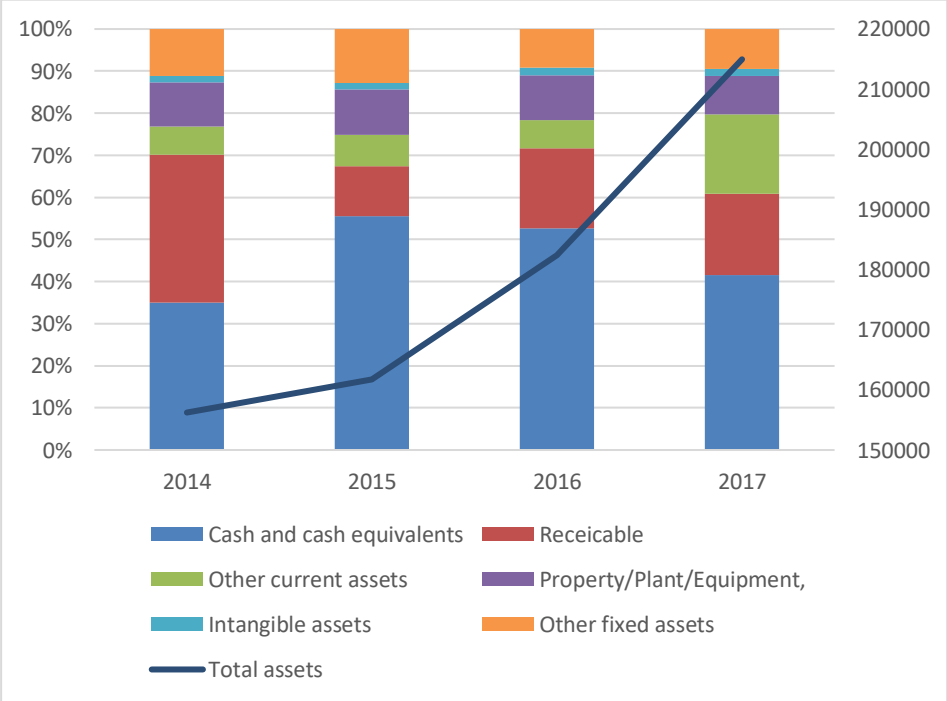
proportion of cash. The smallest proportion of assets was intangible assets, always between 1% and 2%. Property/Plant/Equipment accounted for about 10%.

Table 4.4 vertical common-size analysis of assets of balance sheet

Year	2014	2015	2016	2017
Total Assets	100.00%	100.00%	100.00%	100.00%
Total Current Assets	76.90%	74.80%	78.36%	79.80%
Cash and equivalents	35.00%	55.57%	52.65%	41.48%
Receivables	35.12%	11.86%	19.05%	19.32%
Other current assets	6.78%	7.36%	6.66%	18.99%
Fixed assets	23.10%	25.20%	21.64%	20.20%
Property/Plant/Equipment,	10.37%	10.81%	10.67%	9.03%
Intangible assets	1.59%	1.64%	1.84%	1.68%
Other fixed assets	11.15%	12.75%	9.13%	9.50%

Source: own elaboration based on company's financial statements

Chart 4.1 Vertical common-size analysis for assets of balance sheet



Source: own elaboration based on company's financial statements

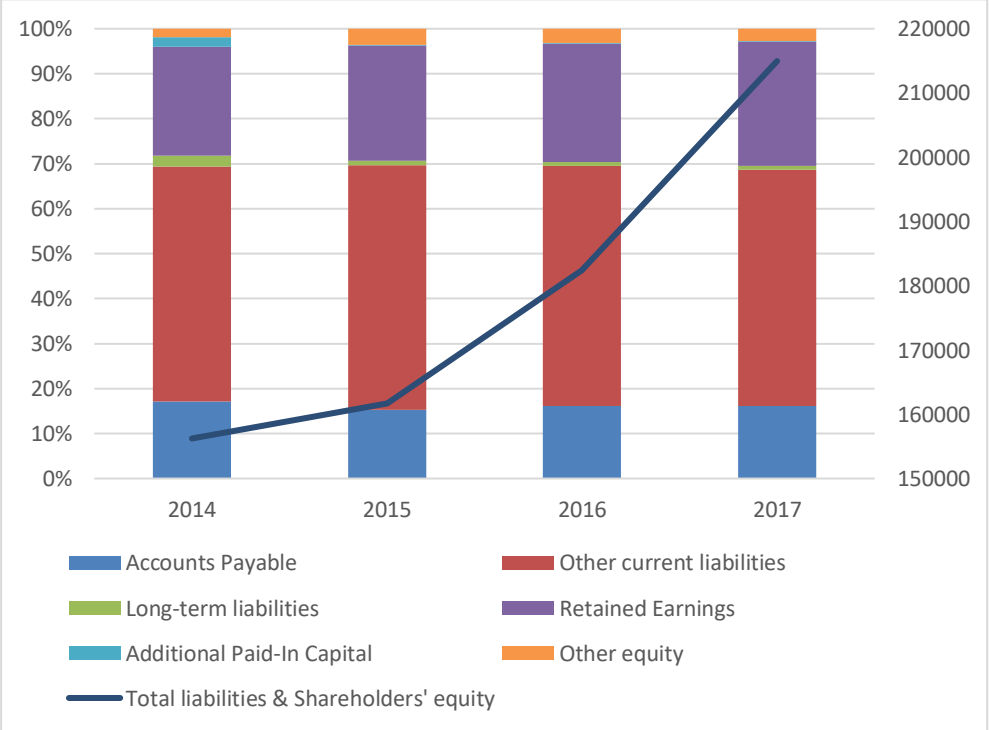
Table 4.5 and chart 4.2 show the proportion of items in liabilities and equity.

Table 4.5 Vertical common-size analysis for liabilities and equity of balance sheet

Year	2014	2015	2016	2017
Total liabilities and equity	100%	100%	100%	100%
Total liabilities	71.7%	70.6%	70.4%	69.5%
Current liabilities	69.4%	69.7%	69.6%	68.6%
Accounts Payable	17.1%	15.3%	16.2%	16.1%
Other current liabilities	52.2%	54.3%	53.4%	52.5%
Long-term liabilities	2.4%	1.0%	0.8%	0.9%
Total equity	28.3%	29.4%	29.6%	30.5%
Retained Earnings	24.3%	25.6%	26.3%	27.7%
Additional Paid-In Capital	2.0%	0.1%	0.1%	0.0%
Other equity	1.9%	3.6%	3.2%	2.8%

Source: own elaboration based on company's financial statements

Chart 4.2 Vertical common-size analysis for liabilities and equity of balance sheet



Source: own elaboration based on company's financial statements

According to Table 4.5 and Figure 4.2, we can observe that the total liabilities of Gree's liabilities and equity accounted for about 70%, and the total equity accounted

for about 30%. The proportion of each item was relatively stable and did not changed to a large extent. Among the company's liabilities, almost all liabilities were current liabilities, long-term liabilities only accounted for a small portion, long-term liabilities accounted for the highest in 2014, only about 2.4%, and even less than 1% in 2016 and 2017. A high percentage of current liabilities should be the reason why cash accounted for a large proportion of the company's assets. Among the equity, the largest proportion was retained earnings, and it increased year by year, reaching the highest in 2017, at 27.7%. The lowest percentage was additional paid-in capital, which was only 0.1% in 2015 and 2016, and had no additional paid-in capital in 2017.

Next, we analyze the proportion of the items in the income statement in total revenues. Table 4.6 and chart 4.3 are data for vertical common-size analysis of income statement.

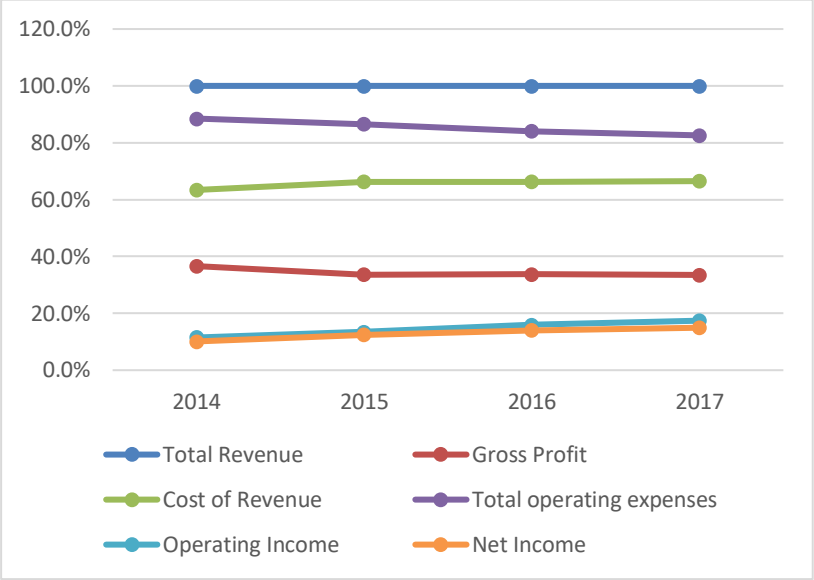
In Table 4.6 and Figure 4.3, we see that Gree's proportions of profit was positive for those four years, indicating that the company was profitable from 2014 to 2017. The proportion of the company's operating income and net income grew steadily year by year, while the proportion of the total operating expenses decreased year by year, so the company's profitability was good. The company's cost of revenues and gross profit remained stable.

Table 4.6 Vertical common-size analysis of income statement

Year	2014	2015	2016	2017
Total Revenue	100.0%	100.0%	100.0%	100.0%
Gross Profit	36.6%	33.7%	33.7%	33.5%
Cost of Revenue	63.4%	66.3%	66.3%	66.5%
Total operating expenses	88.5%	86.6%	84.1%	82.6%
Operating Income	11.5%	13.4%	15.9%	17.4%
Net Income	10.1%	12.5%	14.0%	14.9%

Source: own elaboration based on company’s financial statements

Chart 4.3 Vertical common-size analysis of income statement



Source: own elaboration based on company's financial statements

4.2 Financial ratio analysis of Gree

We have already explained the financial ratios analysis in Chapter 2 and mentioned the relevant formulas. In this part, we will use the actual data and the above formulas to calculate and analyze Gree's financial ratios， including profitability ratios, solvency ratio, leverage ratios, and activity ratios. The data used can be found in the company's financial statements.

4.2.1 Profitability ratios

The profitability ratios refer to the ability of enterprises to earn profits in normal operations, the basis for the survival and development of enterprises, and the indicators that companies are very concerned about. We will calculate four profitability ratios, including operating profit margin, net profit margin, return on assets and return on equity. Data for calculating profitability ratios are listed in Table 4.7

Table 4.7 Original data for profitability ratios (In Millions of CNY)

Year	2014	2015	2016	2017
Total assets	156,230.95	161,698.02	182,373.99	214,968.00
Total equity	44,152.65	47,521.38	53,972.19	65,595.01
Revenues	140,005.39	100,564.45	110,113.10	150,019.55
EBIT	16,089.23	13,516.18	17,489.29	26,119.23
EAT	14,155.17	12,532.44	15,463.63	22,401.58

Source: Gree's annual financial statements

Operating profit margin

It indicates the percentage of revenue available to cover operating and other expenditures. It can be calculated using formula (2.5)， table 4.8 is the operating profit margin of Gree from 2014 to 2017.

Table 4.8 Operating profit margin of Gree

Year	2014	2015	2016	2017
Operating profit margin	11.49%	13.44%	15.88%	17.41%

Source: own elaboration based on company's financial statements

From the above table, we can see that Gree's operating profit margin increased year by year from 2014 to 2017, it was always higher than 10% and grew steadily without significant fluctuations. The above shows that Gree had a good period of operation during that period, and there were more and more revenues to cover operating and other expenditures.

Net profit margin

This indicator reflects the amount of net profit from per one unit of sales, indicating the level of income from sales revenue. We can use formula（2.6）to calculate the net profit margin.

From Table 4.9, we can see that from 2014 to 2017, Gree's net profit margin was always greater than 10%, showing a growth trend, reaching nearly 15% by 2017. The net profit margin grew almost by 50% from 2014 to 2016, and growth began to slow

down from 2016 to 2017.

Table 4.9 Net profit margin of Gree

Year	2014	2015	2016	2017
Net profit margin	10.11%	12.46%	14.04%	14.93%

Source: own elaboration based on company's financial statements

Return on assets

This indicator reflects the level of profit earned by the company using all assets, that is, how much the company can earn for each asset in a unit of currency. Formula (2.7) can be used to calculate the return on assets.

Table 4.10 Return on assets of Gree

Year	2014	2015	2016	2017
Return on assets	10.30%	8.36%	9.59%	12.15%

Source: own elaboration based on company's financial statements

According to Table 4.10, we can observe that Gree's return on assets decreased in 2015 compared to 2014, which was about 2 percentage point lower, and then began to rise again, rising rapidly from 2016 to 2017. It can also be seen from the changes in total assets that Gree's total assets had risen rapidly since 2015, indicating that the company begun to expand its business scale and profitability also increased during this period.

Return on equity

This indicator reflects the level of return on shareholders' equity and is used to measure the efficiency of the company's use of its own capital. The higher the indicator, the higher the return from investment. We can use formula (2.8) to calculate return on equity.

Table 4.11 Return on equity of Gree

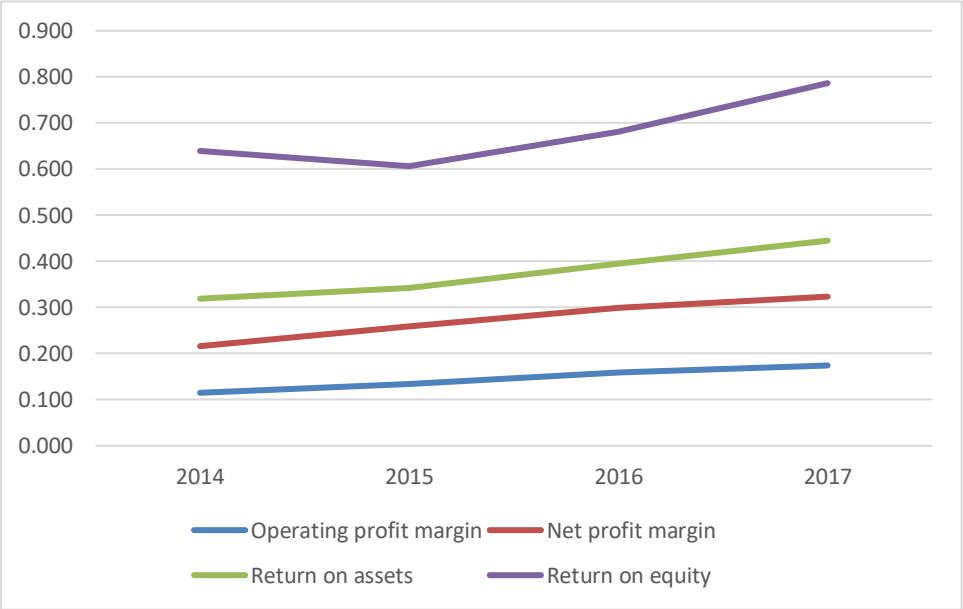
Year	2014	2015	2016	2017
Return on equity	32.06%	26.37%	28.65%	34.15%

Source: own elaboration based on company's financial statements

As can be seen from Table 4.11, Gree's return on equity declined significantly in 2015, and it started to increase year by year, reaching 34.15% in 2017, exceeding the ratio of 2014. As can be seen from the company's financial statements, Since 2015, Gree's total equity started to rise rapidly, and EAT was growing, indicating that the growth of Gree's return on equity is the result of the joint effect of EAT and owner's equity. The company retained strong profitability while absorbing capital.

We make a figure for profitability ratios of Gree from 2014 to 2015.

Figure 4.4 Profitability ratios of Gree



Source: own elaboration based on company's financial statements

From the figure, Gree's profitability ratios had grown significantly from 2014 to 2017. Although OPM declined in 2015, it had grown rapidly since then. So in summary, Gree has a good profitability.

4.2.2 Liquidity ratios

Liquidity ratios measure a company's ability to repay current liabilities. It includes current ratio, quick ratio, cash ratio. Table 4.11 is the data to be used to calculate liquidity ratios.

Table (4.12) Original data for liquidity ratios (In Millions of CNY)

Year	2014	2015	2016	2017
Total current assets	120,143.48	120,949.31	142,915.07	171,534.65
Total current liabilities	108,388.52	112,625.18	126,852.01	147,490.79
Cash and marketable securities	54,688.36	89,863.00	96,024.07	89,172.92
Total Inventories	8,599.10	9,473.94	9,024.91	16,568.35

Source: own elaboration based on company's financial statements

Current ratio

The current ratio is the most commonly used measure of short-term debt liquidity and an indicator of short-term risk. Current ratio can be calculated using formula (2.9).

Table 4.13 Current ratio of Gree

Year	2014	2015	2016	2017
Current ratio	110.85%	107.39%	112.66%	116.30%

Source: own elaboration based on company's financial statements

From Table 4.13, we can see that the current ratio has decreased in 2015 compared with 2014. According to Gree's financial statements, Gree's current assets have almost no change from 2014 to 2015, and current liabilities have significantly rising, which is why current ratios have declined. After 2015, the current ratio began to rise, reaching a peak of 116.3% in 2017.

Quick Ratio

The Quick Ratio measures the ability of a company's current assets other than inventories to immediately realize its ability to repay current liabilities. It can be calculated by formula (2.10).

Table 4.14 Quick ratio of Gree

Year	2014	2015	2016	2017
Quick ratio	102.91%	98.98%	105.55%	105.07%

Source: own elaboration based on company's financial statements

According to Table 4.14, Gree's quick ratio dropped significantly from 2014 to 2015, and increased significantly from 2015 to 2016，there was no obvious change from 2016 to 2017. As can be seen from Gree's financial statements, from 2014 to2015, the company's current assets2015, the company's current assets remained basically the same, but the inventories increased a lot, so Gree's current ratio dropped during this period. From 2015 to 2016, Gree's current assets increased significantly, but inventory decreased, which led to a significant increase in the quick ratio. From 2016 to 2017, the company's total current assets, inventory, and current liabilities have increased to a large extent, so the quick ratio has not changed much.

Cash ratio

Cash ratio excludes inventory and receivables and only measures the most liquid assets of all assets relative to current liabilities, so it is the most conservative of the three liquidity ratios. We can use formula (2.11) to calculate cash ratio

Table 4.15 Cash ratio of Gree

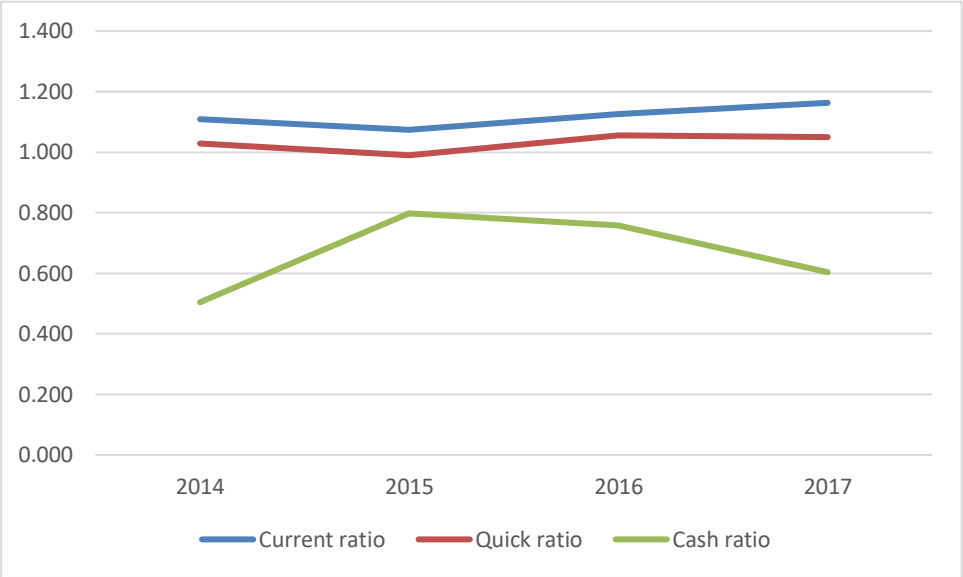
Year	2014	2015	2016	2017
Cash ratio	50.46%	79.79%	75.70%	60.46%

Source: own elaboration based on company's financial statements

As can be seen from the above table, Gree had the lowest cash ratio in 2014. It can also be observed from the balance sheet that the company had relatively few cash in 2014. From 2015 to 2017, the company had a lot of cash, but in 2017 the company's current liabilities was higher, so in 2017 Gree's cash ratio was lower.

Figure 4.5 is the liquidity ratios of Gree from 2014 to 2015. From the figure, we can see that Gree's current ratio and quick ratio changed little, they were mainly between 100% and 120%, Current assets were a little more than current liabilities and the cash ratio varied greatly. In summary, Gree's liquidity is poor.

Figure 4.5 The liquidity ratios of Gree from 2014 to 2015



Source: own elaboration based on company's financial statements

4.2.3 Solvency ratios

The size of solvency reflects to a large extent the degree of risk of business operations. Solvency ratios mainly include debt ratio, debt-to-equity ratio and interest coverage. Table 4.16 is the data needed to calculate the solvency ratios.

Table 4.16 Original data for solvency ratio (In Millions of CNY)

Year	2014	2015	2016	2017
Total liabilities	112,078.00	114,177.00	128,402.00	149,372.99
Total assets	156,231.00	161,698.00	182,374.00	214,968.00
Total equity	44,152.70	47,521.40	53,972.20	65,595.01
EBIT	16,089.23	13,516.18	17,489.29	26,119.23
Interest paid	-316.13	-1,041.60	-3,743.39	-184.49

Source: own elaboration based on company's financial statements

Debt ratio

The debt ratio tells us what percentage of the company's assets is financed by liabilities. It can be calculated by formula (2.12).

Table 4.17 Debt ratio of Gree

Year	2014	2015	2016	2017
Debt ratio	71.74%	70.61%	70.41%	69.49%

Source: own elaboration based on company's financial statements

From Table 4.17, we can see that Gree's debt ratio changed little from 2014 to 2017 and was stable at around 70%. It can be seen that the company's use of liabilities was reasonable.

Debt-to-equity ratio

Debt-to-equity represents the ratio of liabilities and equity in the source of funds for company assets. It's calculated based on formula (2.13).

Table 4.18 Debt-equity-equity ratio of Gree

Year	2014	2015	2016	2017
Debt-to-equity ratio	253.84%	240.26%	237.90%	227.72%

Source: own elaboration based on company's financial statements

As can be seen from table 4.18, Gree's debt-to-equity ratio was the highest in 2014, reaching 253.84%, and then showed a downward trend year by year, indicating that the company's use of liabilities is getting lower and lower relative to equity.

Interest coverage

Interest coverage is the ratio of the profit that can be used to pay interest to the interest payable in the current period. It's calculated based on formula (2.14). However, from Gree's income statement, we can see that the company's interest paid is negative, that is, the company borrowed money from other companies, and the interest recovered was greater than the interest that Gree needs to pay. So Gree has enough ability to pay interest.

In summary, Gree's liabilities accounted for a large portion of the use of assets, more than twice the equity. Gree has poor solvency.

4.2.4 Activity ratios

Activity ratios can be used to evaluate the efficiency of a company's operations. It includes average collection period, accounts receivable turnover, inventory turnover

and total assets turnover. Data for calculating profitability ratios are listed in Table 4.20.

Table 4.20 Original data for activity ratio (In Millions of CNY)

Year	2014	2015	2016	2017
Total Assets	156,230.95	161,698.02	182,373.99	214,968.00
Revenues	140,005.39	100,564.45	110,113.10	150,019.55
Receivables	54,864.53	19,184.44	34,751.14	41,535.34
Cost of goods sold	88,756.12	66,700.39	72,979.29	99,759.29

Source: own elaboration based on company's financial statements

Average collection period

The average collection period indicates the average number of days elapsed between a credit sale and the date the company receives the payment from the credit sale. We use formula (2.15) to calculate average collection period.

Table 4.21 Average collection period of Gree (In days)

Year	2014	2015	2016	2017
Average collection period	141.07	68.68	113.61	99.67

Source: own elaboration based on company's financial statements

For table 4.21, Gree's average collection period was the highest in 2014, but fell by half in 2015, reflecting the company's ability to convert accounts receivable into cash faster in 2015. The average collection period in 2016 and 2017 also dropped a lot compared to 2014, around 100, indicating that the company can effectively collect accounts receivable.

Accounts receivable turnover

The ratio also measures how many times a company's receivables are converted to cash in a period. It can be calculated by formula (2.16).

Table 4.22 Account receivable turnover of Gree

Year	2014	2015	2016	2017
Account receivable turnover	2.55	5.24	3.17	3.61

Source: own elaboration based on company's financial statements

As can be seen from Table 2.22, Gree's accounts receivable turnover was the largest in 2015 at 5.24, which means that Gree recovered its accounts receivable to its customers approximately every two months. But in 2014, the company needed to collect its money every four months.

Inventory turnover

Inventory turnover is a ratio showing how many times a company has sold and replaced inventory during a given period on average. We can use formula (2.17) to calculate inventory.

Table 4.23 Inventory turnover of Gree

Year	2014	2015	2016	2017
Inventory turnover	10.32	7.04	8.09	6.02

Source: own elaboration based on company’s financial statements

From Table 4.23, Gree's inventory turnover was the highest in 2014, indicating that it was able to sell or use its inventory most effectively in 2014. Although the company's inventory turnover increased in 2016, it generally showed a downward trend, indicating that Gree's ability to handle inventory declined.

Total assets turnover

The asset turnover ratio measures the value of a company's sales or revenues relative to the value of its assets. It’s calculated based on formula (2.18).

Table 4.24 Total assets turnover of Gree

Year	2014	2015	2016	2017
Total assets turnover	0.90	0.62	0.60	0.70

Source: own elaboration based on company’s financial statements

From the above table, Gree's total assets turnover was the highest in 2014, reaching 0.90, reflecting the company's ability to use assets to generate revenue during the year. Then compared with the total assets turnover in 2014, there was a big decline in 2015 and 2016. It can also be seen in the income statement that the revenue of Gree had indeed declined in those two years. Then the total assets turnover picked up in 2017.

In summary, Gree took a long time to collect accounts receivables and the ability to handle inventory is also general. The assets management of Gree is normal.

4.3 Dupont analysis

From Chapter 2 we know that ROE can be divided into three parts, namely net profit margin, total assets turnover and financial leverage, and net profit margin can be divided into tax burden, interest burden and operating profit margin. We will use the actual data of Gree to calculate and analyze the company's ROE. Table 4.24 shows the component ratios for ROE.

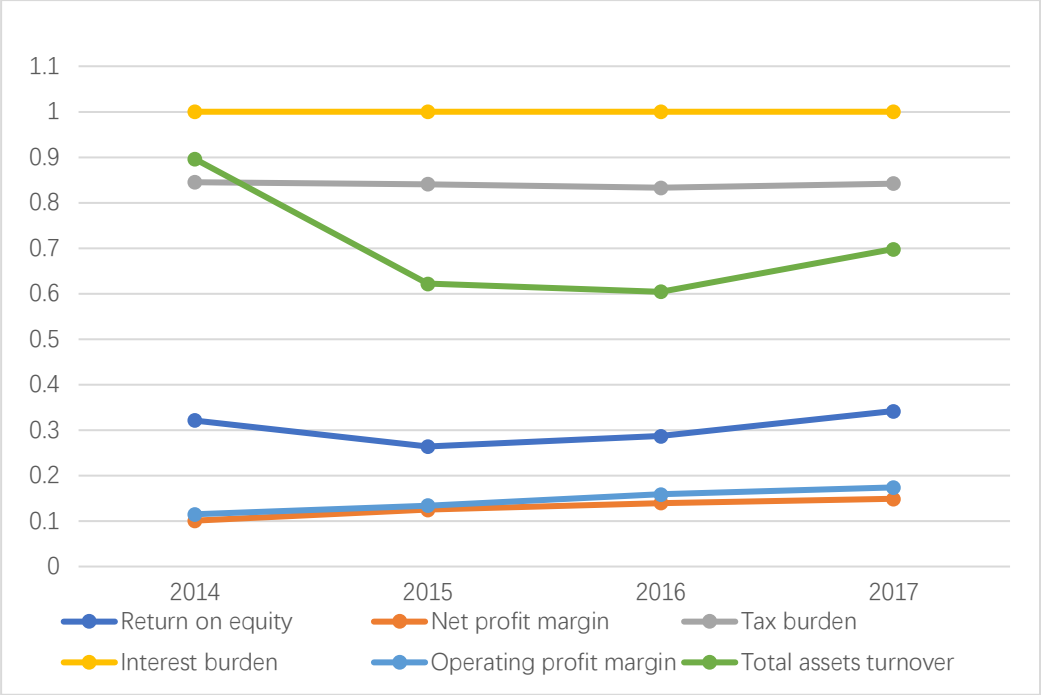
Figure 4.4 shows a more vivid picture of Gree's return on equity. From 2014 to 2017, we first focus on ROE, which began to decline in 2014 and began to rise in 2015. From the figure we can see that only total assets turnover and ROE had similar trends, so we judge that total assets turnover had a great influence on the ROE changes. From the income statement, we know that Gree's interest paid was negative, which means that Gree had no interest paid, EBT was equal to EBIT, so Gree's interest burden was equal to 1. In 2016, Gree needed to pay a large amount of interest, so its interest burden increased a lot in 2016. From 2015 to 2017, Gree's net profit margin and operating profit margin and ROE showed the same trend, and the company's profitability during this period increased, which is why ROE grew during this period.

Table 4.25 Component ratios for ROE.

Year	2014	2015	2016	2017
Return on equity	0.321	0.264	0.287	0.342
Net profit margin	0.101	0.125	0.140	0.149
Tax burden	0.845	0.841	0.833	0.842
Interest burden	1	1	1	1
Operating profit margin	0.115	0.134	0.159	0.174
Total assets turnover	0.896	0.622	0.604	0.698
Financial leverage	3.538	3.403	3.379	3.277

Source: own elaboration based on company’s financial statements

Chart 4.6 Component ratios for ROE



Source: own elaboration based on company's financial statements

4.3.1 Influence quantification

In this section, we will use method of gradual changes to analyze which factors had an impact on Gree's ROE between 2014 and 2017. We can use formula (2.23) for calculation. First, we calculate ratios that these methods need to use.

Table 2.26 Basic ratios for influence quantification

Year	2014	2015	2016	2017
Return on equity	0.321	0.264	0.287	0.342
Net profit margin	0.103	0.084	0.096	0.122
Total assets turnover	0.896	0.622	0.604	0.698
Financial leverage	3.538	3.403	3.379	3.277

Source: own elaboration based on company's financial statements

Table 4.28, table 4.29 and table 4.30 are the gradual changes of Gree's ROE from 2014 to 2017.

Gradual changes of ROE between 2014 and 2015

Table 4.28 Method of gradual changes (2014/2015)

	a_0(2014)	a_1(2015)	Δa	Δx_{ai}	order
a_1=EAT/revenues	0.103	0.084	-0.019	-0.061	2
a_2=revenues/assets	0.896	0.622	-0.274	-0.081	1
a_3=assets/equity	3.538	3.403	-0.136	-0.007	3

Source: own elaboration based on company's financial statements

Gradual changes of ROE between 2015 and 2016

Table 4.29 Method of gradual changes (2015/2016)

	a_0(2015)	a_1(2016)	Δa	Δx_{ai}	order
a_1=EAT/revenues	0.084	0.096	0.012	0.026	1
a_2=revenues/assets	0.622	0.604	-0.018	-0.006	2
a_3=assets/equity	3.403	3.379	-0.024	-0.001	3

Source: own elaboration based on company's financial statements

Gradual changes of ROE between 2016 and 2017

Table 4.30 Method of gradual changes (2016/2017)

	a_0(2016)	a_1(2017)	Δa	Δx_{ai}	order
a_1=EAT/revenues	0.096	0.122	0.026	0.052	1
a_2=revenues/assets	0.604	0.698	0.094	0.039	2
a_3=assets/equity	3.379	3.277	-0.102	-0.009	3

Source: own elaboration based on company's financial statements

From Tables 4.28, 4.29, and 4.30, we conclude that the least impact on Gree's return on equity was always financial leverage, and it always was negative. In 2014/2015, the biggest impact on the company's return on equity was total assets turnover, followed by net profit margin, and both of they were negative. In 2015 to 2016, the biggest impact on the company was the net profit margin, and it was positive. Total assets turnover and financial leverage had less impact on ROE and negatively impacted. In 2016/2017, Net profit margin and financial leverage havd a positive impact on the company's ROE, and net profit margin had a greater impact on ROE. So the best way to improve Gree's return

on equity is to increase the net profit margin.

5.Conclusion

The objective of the thesis is to perform a financial analysis of Gree Electric Appliances Inc. In the analysis, we select Gree's financial data of Gree from 2014 to 2017. This thesis is divided into five chapters. The first part is to introduce the content and structure of the paper. The second chapter describes the financial analysis methods that need to be used. The third chapter is the characteristics of Gree. The fourth chapter is based on the financial analysis method of Chapter 2, using Gree's actual financial data to conduct financial analysis of Gree. The final chapter is a summary.

In the previous chapters, we have introduced the financial analysis methods, the characteristics of Gree and analyzed the financial condition of Gree with actual data. In this section, we summarize the previous analysis.

In the common-size analysis of balance sheet, current assets accounted for a large proportion of total assets, and there was a significant increase in 2016 and 2017. Among the current assets, cash accounted for the largest proportion, accounting for more than 50% of total assets in 2015 and 2016. In terms of liabilities and equity, liabilities accounted for about 70%, and equity accounts for about 30%. Gree's liabilities were almost always current liabilities, long-term liabilities accounted for only a small portion, and current liabilities increased substantially. In terms of equity, the largest proportion was retained earnings.

In the financial ratio analysis, we use the ratios of the data in the financial statements to analyze Gree's profitability, liquidity, solvency, assets management. Regarding profitability, Gree's operating profit margin and net profit margin were always higher than 10%, and the trend of increasing year by year. Although return on assets and return on equity declined in 2015, they began to rise later and exceeded the ratio of decline, so we conclude that Gree's profitability is good. From the perspective of liquidity, Gree's quick ratio was about 1, and the current ratio was only a little higher than 1. It means that the company had to use almost all current assets to cope with current liabilities, and the company's liquidity was very poor. Regarding the solvency, the debt ratio and the debt-to-equity ratio were both high, indicating that the proportion

of debt was too high and the solvency was poor. From the perspective of interest coverage, the company had enough capacity to pay interest. From the perspective of asset management, the company's ability to recover accounts receivable and process inventory was poor.

In the DuPont analysis we decomposed return on equity, and we found that total assets turnover had the same trend on return on equity. In influence quantification, the net profit margin that has the greatest impact on return on equity.

In summary, although Gree's profitability is better, but liquidity and solvency are poor, Gree should adjust its assets structure, increase equity investment, reduce liability investment, and reduce current liabilities. In terms of asset management, changing the payment policy allows the company to collect receivables faster, improve marketing levels, and increase the ability to process inventory.

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List of Abbreviations

ACP	Average collection period
ART	Account receivable turnover
CNY	Chinese Yuan
EBIT	Earnings before interest and taxes
EBT	Earnings before taxes
EAT.	Earnings after taxes
Gree	Gree Electric Appliances Inc
IT	Inventory turnover
NPM	Net profit margin
OPM	Operating profit margin
ROA	Return on assets
ROE	Return on equity
R&D	Research and development
TAT	Total assets turnover

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Ostrava dated 10.05.2019

Zhenhua Xiao 肖振华

Student's name and surname

List of Annexes

Annexes

Annex 1

Balance sheet of Gree Electric Appliances Inc (In Millions of CNY)

Year	2014	2015	2016	2017
Total Current Assets	120,143.48	120,949.31	142,915.07	171,534.65
Cash and Short Term Investments	54,688.36	89,863.00	96,024.07	89,172.92
Cash	54,545.67	88,819.80	2,707.82	5.06
Cash & Equivalents	0	0	93,045.84	88,050.06
Short Term Investments	142.69	1,043.21	270.41	1,117.81
Total Receivables, Net	54,864.53	19,184.44	34,751.14	41,535.34
Accounts Receivables - Trade, Net	2,661.35	2,879.21	2,824.29	5,814.49
Total Inventory	8,599.10	9,473.94	9,024.91	16,568.35
Prepaid Expenses	1,591.49	847.93	1,814.95	3,717.87
Other Current Assets, Total	400.00	1,580.00	1,300.00	20,540.16
Total Assets	156,230.95	161,698.02	182,373.99	214,968.00
Property/Plant/Equipment, Total - Net	16,193.63	17,476.65	19,456.19	19,409.83
Property/Plant/Equipment, Total - Gross	21,685.22	23,767.75	27,343.45	28,751.81
Accumulated Depreciation, Total	-5,491.59	-6,291.10	-7,887.26	-9,341.97
Intangibles, Net	2,480.29	2,656.14	3,355.28	3,604.47
Long Term Investments	2,750.21	3,291.72	2,085.95	2,801.96
Note Receivable - Long Term	6,441.70	7,872.62	4,737.18	6,673.43

Other Long Term Assets, Total	8,221.63	9,451.57	9,824.32	10,943.66
Total Current Liabilities	108,388.52	112,625.18	126,852.01	147,490.79
Accounts Payable	26,784.95	24,794.27	29,541.33	34,552.89
Accrued Expenses	5,385.47	2,750.86	3,114.86	4,190.48
Notes Payable/Short Term Debt	11,870.71	14,278.91	21,860.70	30,672.75
Current Port. of LT Debt/Capital Leases	2,061.49	2,403.75	0	0
Other Current liabilities, Total	62,285.90	68,397.40	72,335.12	78,074.67
Total Liabilities	112,078.29	114,176.64	128,401.80	149,372.99
Total Long Term Debt	2,258.97	0	0	0
Long Term Debt	2,258.97	0	0	0
Total Debt	16,191.17	16,682.65	21,860.70	30,672.75
Deferred Income Tax	256.85	244.14	280.01	403.49
Minority Interest	978.80	1,045.23	979.97	1,239.79
Other Liabilities, Total	195.16	262.09	289.81	238.92
Total Equity	44,152.65	47,521.38	53,972.19	65,595.01
Common Stock, Total	3,007.87	6,015.73	6,015.73	6,015.73
Additional Paid-In Capital	3,191.27	185.95	183.40	103.88
Retained Earnings (Accumulated Deficit)	37,935.78	41,444.62	47,993.83	59,567.10
Other Equity, Total	17.75	-124.93	-220.78	-91.70
Total Liabilities & Shareholders' Equity	156,230.95	161,698.02	182,373.99	214,968.00
Total Common Shares Outstanding	6,015.73	6,015.73	6,015.73	6,015.73

Annex 2

Income statement of Gree Electric Appliances Inc (In Millions of CNY)

Year	2014	2015	2016	2017
Total Revenue	140,005.39	100,564.45	110,113.10	150,019.55
Revenue	140,005.39	100,564.45	110,113.10	150,019.55
Cost of Revenue, Total	88,756.12	66,700.39	72,979.29	99,759.29
Gross Profit	51,249.27	33,864.07	37,133.81	50,260.26
Total Operating Expenses	123,916.17	87,048.28	92,623.82	123,900.33
Selling/General/Admin. Expenses, Total	35,390.90	21,286.84	23,410.53	24,365.79
Interest Expense (Income) - Net Operating	-316.13	-1,041.60	-3,743.39	-184.49
Unusual Expense (Income)	54.41	76.18	-48.61	150.90
Other Operating Expenses, Total	30.87	26.47	25.99	-191.17
Operating Income	16,089.23	13,516.18	17,489.29	26,119.23
Gain (Loss) on Sale of Assets	-13.60	-8.08	-12.25	0
Other, Net	676.81	1,401.32	1,083.79	497.96
Net Income Before Taxes	16,752.43	14,909.42	18,573.07	26,617.18
Provision for Income Taxes	2,499.48	2,285.69	3,006.62	4,108.59
Net Income After Taxes	14,252.95	12,623.73	15,566.45	22,508.60
Minority Interest	-97.79	-91.29	-102.83	-107.02

Net Income Before Extraordinary Items	14,155.17	12,532.44	15,463.63	22,401.58
Net Income	14,155.17	12,532.44	15,463.63	22,401.58
Income Available to Common Excluding Extraordinary Items	14,155.17	12,532.44	15,463.63	22,401.58
Diluted Net Income	14,155.17	12,532.44	15,463.63	22,401.58
Diluted Weighted Average Shares	6,015.73	6,015.73	6,015.73	6,015.73
Diluted EPS Excluding Extraordinary Items	2.35	2.08	2.57	3.72
DPS - Common Stock Primary Issue	1.50	1.50	1.80	0
Diluted Normalized EPS	2.36	2.10	2.56	3.75

Annex 3

Cash flow statement of Gree Electric Appliances Inc (In Millions of CNY)

Year	2014	2015	2016	2017
Cash From Operating Activities	18,939.17	44,378.38	14,859.95	16,338.08
Cash Receipts	85,534.45	110,918.32	69,896.62	107,599.12
Cash Payments	-38,816.90	-42,541.26	-40,478.78	-58,365.17
Cash Taxes Paid	-12,822.78	-12,536.56	-10,194.56	-11,539.49
Changes in Working Capital	-14,955.60	-11,462.12	-4,363.32	-21,356.38
Cash From Investing Activities	-2,862.14	-4,713.15	-19,246.55	-62,253.46
Capital Expenditures	-1,777.30	-2,884.51	-3,276.94	-2,424.81
Other Investing Cash Flow Items, Total	-1,084.83	-1,828.64	-15,969.62	-59,828.65
Cash From Financing Activities	-1,864.31	-7,683.02	-5,751.56	-2,248.34
Financing Cash Flow Items	235.62	1,257.49	2,100.25	271.76
Total Cash Dividends Paid	-4,607.08	-9,525.01	-9,180.07	-11,121.28
Issuance (Retirement) of Debt, Net	2,507.14	584.50	1,328.26	8,601.18
Foreign Exchange Effects	34.57	1,876.34	4,094.50	-1,798.03
Net Change in Cash	14,247.29	33,858.55	-6,043.66	-49,961.74